

That which is claimed is:

1. A process for making a photovoltaic device comprising depositing at least one thin film layer on a substrate by moving the substrate past one or more sources of material to be deposited, thereby forming on the substrate at least one thin film of the material.

2. The process of Claim 1 wherein the material deposited comprises one or more of a transparent conductive oxide, amorphous silicon or a metal.

3. The process of Claim 1 wherein the process is a continuous process.

4. The process of Claim 1 wherein the process is a semi-continuous process.

5. The process of Claim 1 comprising the steps of depositing a layer comprising a transparent conductive oxide layer, depositing at least one layer comprising amorphous silicon and depositing at least one layer comprising a metal, and wherein all the layers are deposited at a relatively similar elevated temperature and a relatively similar reduced pressure.

6. The process of Claim 5 wherein the depositing steps are accomplished without the substrate cooling more than about 20° C between each step.

7. The process of Claim 6 wherein the depositing steps are accomplished without the pressure surrounding the substrate varying by more than about 10 Torr between each step.

8. The process of Claim 1 further comprising laser scribing at least one layer.

9. The process of Claim 5 further comprising laser scribing at least one layer.

10. The process of Claim 9 wherein the laser scribing is conducted at about the same pressure and at about the same pressure used to deposit the layer scribed.

11. An apparatus for depositing at least one layer on a substrate to form a photovoltaic device comprising: a means for transporting the substrate, at least one deposition chamber, a means for depositing photovoltaically active layers on the substrate, means for depositing a front contact on the substrate, means for depositing a back contact on the substrate, wherein at least one of the depositing means can accomplish the deposition in a continuous manner as the substrate passes the depositing means.

12. The apparatus of Claim 11 further comprising at least one laser for scribing at least one layer.

13. The apparatus of Claim 12 further comprising a laser scribing chamber and wherein at least one laser is positioned outside the chamber and the chamber
5 having a window to permit the passage of laser light beams into the chamber.

14. The apparatus of Claim 11 wherein at least one of the depositing means is stationary.

15. The apparatus of Claim 12 further comprising at least one laser scanner.

10 16. The apparatus of Claim 11 wherein the deposition chamber is a low-pressure deposition chamber.

17. The apparatus of Claim 13 wherein the laser scribing chamber is a low-pressure chamber.

18. A photovoltaic device formed by depositing one or more layers on a
15 substrate wherein at least one of the layers is deposited in a continuous manner as the substrate passes a stationary means for depositing the layer.

19. The photovoltaic device of Claim 18 comprising at least one amorphous silicon layer.

20 20. The photovoltaic device of Claim 19 comprising at least one p-i-n junction.